

Targeting (253) Mathilde

D. Dunham, R. Farquhar, J. McAdams (JHU-APL), B. Williams, D. Scheeres (JPL), L. Wasserman (Lowell Obs.), A. Klemola (Lick Obs.), H. Harris (USNO-Flagstaff), J. Manek (Stefanik Obs.)

The Near Earth Asteroid Rendezvous (NEAR) spacecraft was successfully launched on February 17th on its 3-year journey to rendezvous with the asteroid (433) Eros. On June 26, 1997, NEAR will fly by the C-class slow-rotating (17-day rotation period) asteroid (253) Mathilde.

This paper will describe some of the early NEAR operations, especially the trajectory correction maneuvers that have been performed so far to target the Mathilde flyby. Preliminary plans for the flyby will be mentioned.

On July 9th this year, Mathilde occulted an 11th-magnitude star in Virgo. Since the nominal path was close to the Baja California peninsula, the NEAR Project was willing to fund the travel to set up 4 stations with 8-inch telescopes and image-intensified video systems to record this event, which could have provided an approximate size and shape of Mathilde that could aid planning for next year's NEAR flyby. Special astrometric observations were made at the Lick, U. S. Naval (Flagstaff), and Ondrejov Observatories to update the prediction for the occultation. Mathilde is relatively small for occultation work, having a diameter of 61 km based on IRAS observations.

Unfortunately, the astrometric observations showed that the path for the occultation would pass offshore in the Pacific Ocean, about 150 km southwest of the southwestern coast of southern Baja California. As a result, the travel plans and the expedition were cancelled at the last minute, less than 48 hours before the event. But the techniques and planning developed for this event could be used for future occultations of other relatively small asteroids of special interest.

Abstract submitted for 1996 DPS meeting

Date submitted: LPI electronic form version 5/96

Division for Planetary Sciences Abstract Form

DPS Category 10

Running #7482

Session 0.00

Invited ☐ Poster presentation ☒ Title only ☐

Have you received your Ph.D. since the last DPS meeting?

Yes ☐ No ☐

Is your abstract newsworthy, and if so, would you be willing to prepare a news release and be available for interviews with reporters?

Yes ☒ No ☐ Maybe ☐

Paper presented by David W. Dunham

Group SRM, Room 23-376
J.H.U. Applied Physics Lab.
11100 Johns Hopkins Rd.
Laurel MD 20723-6099 U.S.A.
Phone: 301-953-5609
Fax: 301-953-6556
Email: David_Dunham@jhuapl.edu

Special instructions: Tue Aug 27 16:51:10 CDT 1996

Membership Status (First Author):

DPS-AAS Member ☒ Non-Member ☐

Student Member ☐ Student Non-Member ☐

Is this your first DPS presentation? Yes ☐ No ☐

Sponsor: